Invisibility in acoustic waveguides

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Abstract

We are interested in the propagation of waves in acoustic waveguides unbounded in one direction. Generally speaking, for a given obstacle, for an incident field sent in the structure, one observes a reflection and a transmission characterized by some scattering coefficients. The goal of this talk is to explain how to perturb the geometry of the guide to manage to get scattering coefficients as in the reference situation without obstacle. In other words, we show how to cloak the obstacle. Mathematically, the study lies on asymptotic analysis in presence of thin resonants ligaments. The main idea is to play with complex resonances to annihilate the scattering due to the obstacle. This is a joint work with J. Heleine and S.A. Nazarov.